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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/629,833	07/30/2003	Lewis Berkley Davis JR.	839-1478	7277

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EXAMINER

CASAREGOLA, LOUIS J

ART UNIT PAPER NUMBER

3746

DATE MAILED: 04/21/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/629,833

Applicant(s)

DAVIS ET AL.

Examiner

Louis J. Casaregola

Art Unit

3746

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 11-22 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 11-22 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

Objections To Claims

Claims 11-14 are objected to under 37 CFR 1.75(a) as including the following errors in form:

Claims 11 and 13, along with related dependent claims 12 and 14, recite "a computer controller coupled to said fuel trim valves ... for operatively adjusting the fuel trim valve"; see lines 11-12 in both claims 11 and 13. The reference to "the fuel trim valve" (singular) at the end of the cited passage does not agree in number with its antecedent, i.e. "fuel trim valves" (plural).

Claim 13, lines 13-14 further refer to "the fuel/air sensor". This expression also fails to conform to its antecedent, "fuel/air **ratio** sensor".

Claim Rejections - 35 USC 112

Claims 11-22 are rejected under 35 USC 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicants regard as the invention.

The claims all recite "a fuel/air ratio sensor"; see line 19 in claims 11 and 13, and line 6 in claims 17, 19 and 21. The cited expression is considered inaccurate and misleading since the invention disclosed includes no device that can actually sense a fuel/air ratio. The pertinent sensors in this case appear to be exhaust gas

thermocouples 68, but these devices merely sense gas temperature and not fuel/air ratio. The temperatures detected by thermocouples may indicate a variance in fuel/air ratio between combustors, as suggested on page 12 of the specification, but such operation does not constitute sensing or measuring the actual fuel/air ratios themselves.

Claims 15, 17, 19 and 21 further recite "multiple combustors and associated multiple fuel lines and valves to at least one of the combustors"; see lines 1-2 in any of claims 15, 17, 19 and 21. The cited passage is ambiguous. It is unclear whether each of multiple fuel lines and valves is respectively associated with an individual one of the multiple combustors, or the multiple fuel lines and valves are all associated with the "at least one combustor". Furthermore, the disclosure does not clarify this point since the preferred embodiment could conceivably support either interpretation. As shown in Figure 2 for example, there are individual fuel lines and valves associated respectively with each of combustion chambers 1, 2, 3, etc., but there are also plural fuel lines (primary and secondary) and plural valves (trim units 46 and 48) connected to each individual combustion chamber.

Claim Rejections - 35 USC 102

Claims 11-22 are rejected under 35 USC 102 (b) as being anticipated by Beebe et al '931.

The apparatus comprising the present invention appears to be the same as that disclosed by Beebe. Attention is called for example to Beebe's drawing; note that the preferred embodiment shown in Figures 1-4 is virtually identical to the preferred embodiment shown in Figures 1-4 of the present case. Beebe's combustors are supplied with fuel distributed through trim orifices 74 and valves 65 identical to those in the present invention; see Figure 4. Beebe's system, like the present invention, also includes pressure sensors 66, thermocouples 68, and computer control unit 70 coupled to the various valves and sensors. Furthermore, to the extent that the claimed fuel/air ratio sensor corresponds to thermocouples 68 in the present case, there is clearly no difference between the claimed sensor and the prior art.

It is additionally emphasized that Beebe recognizes the importance of limiting fuel/air ratio variation between combustors (col. 2, lines 50-55) and maintaining low NO_x emissions (col. 1, lines 14-63). Thus to the extent that such considerations have any limiting effect on the present claims, they do not serve to distinguish the recited apparatus from the structurally identical apparatus shown by Beebe.

Additional References

Brown et al and Iwata et al are cited as disclosing further pertinent examples of systems for providing individual control of the combustors in a gas turbine engine.

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April 19, 2004



LOUIS J. CASAREGOLA
PRIMARY EXAMINER

If repeated attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Justine Yu, can be reached at 703-308-2675.

Information regarding the status of this application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR, and status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).